



Serial ATA Supplemental Design Guide

Supplement ID	007
Applicable Spec.	1.0 Gold

Submission info

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Description of design guidance

It is recommended that disc drives only spin up upon successful PHY initialization, that is after the PHY enters the DP7:DR_Ready state. Any of a number of methods may be used by the disc drive to defer spin-up prior to PHY initialization and to maintain correct interface stats during drive initialization.

Supplemental Information

Storage subsystems that include more than one Serial-ATA hard disc drive are presented with power system design issues related to the current load presented during system power-up. It is desirable then to provide a simple mechanism by which the storage subsystem controller[s] can sequence disc drive initialization and spin up. Note that Serial-ATA disc drive vendors may not always provide the capability to parse or execute ATA commands prior to spinning up a drive and completing drive initialization, therefore this mechanism does not rely on the AT protocol to accomplish its goal.

Storage subsystem controllers may employ a variety of methods to sequence PHY initialization across their plurality of S-ATA ports, including but not limited to staged release of chip-level resets of host-side S-ATA transceivers, or embedded advanced power management logic.

System implementations must comprehend the various scenarios that may require power management, and the corresponding PHY initialization sequences. For example, upon power up of a populated storage subsystem, PHY communication is initiated with a COMRESET signal generated by the host-side transceiver. The use of the term "host-side transceiver" here refers to the Serial-ATA interface devices located on the storage subsystem controllers. This contrasts with sequence associated with hot-plugging of a Serial-ATA disc drive into an operational storage subsystem, wherein COMINIT signals generated by disc-side transceivers initiate PHY communications. In both of these cases, COMRESET or COMINIT signals are followed by exchange of COMWAKE signals. It is the successful entry into the DP7:DR_Ready state that should be used to gate disc drive spin-up.

Disposition log

12/7/2001	Initial draft written and submitted for review
1/8/2002	Revised and resubmitted with assigned guide number

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